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this subject, but as we cannot spare eleven columns to editorial remarks, we will conclude by stating that a wrong is inflicted upon Science by those who suppose it is answerable for Mr. Spencer's debased views of God and man. In summing up Spencer's teachings Professor Morris exclaimed to the students of the Johns Hopkins University, "all this is gratuitous, extra-scientific absurdity, contradiction and dogmatism." Professor Morris does not stand alone in this opinion, and he has at least our hearty endorsement.

It is possible to believe strongly in the theory of evolution and accept every scientific fact that has ever been demonstrated, and yet receive no shock to a belief in a Divine Providence, while the accumulation of scientific facts in our opinion all tend to confirm such belief, and to demonstrate scientifically that an intelligent Creator has designed and pre-arranged the order of both matter and mind.

In conclusion, we desire to say decisively, that science is not answerable for the vagaries of Mr. Herbert Spencer, his editorial supporters, and others of the same class; his atheistical dogmas are neither founded on scientific investigations or in harmony with scientific discoveries. The mere fact that a scientific journal is made use of for proselyting such views even to the extent of attacking editorially, a President of a university who declined to use a recent work of Spencer's as a class-book, should not be considered evidence that scientific men, as a body, have any regard for the extreme views of Herbert Spencer. On the contrary, those engaged in real scientific work, do not care to interfere with their neighbor's religious opinions, much less do they desire to force atheistical views upon them.

Lastly, we say emphatically, that there is no real conflict between Science and Religion at this present day. Some persons appear to consider that they have a mission to stir up discord and contention between scientific men and their best friends, and the worst feelings are engendered by continued attacks against men holding any religious views who form nine-tenths of the population in all civilized countries.

What better evidence can be given for the correctness of the position we take than the fact, that a large number of our most esteemed scientific workers are men in holy orders. We could fill a page by the mere enumeration of their names. Dallinger, the biologist, who has carried off the highest scientific honors, is a Protestant Clergyman. In astronomy we have a Catholic priest who successfully investigates the mysteries of the heavenly bodies, for Secchi's name will always be classed among eminent astronomers. If there was any real conflict between science and religion, would these men have continued their investigations? Of course not. The conflict at this day is wholly imaginary, invented and kept alive for sensational purpose. If these men would cease their irritating interference, science would be welcomed in every home and be considered one of the most convincing evidences of a divine Providence, instead of being hated and dreaded, as not in harmony with any religious belief.

We do not deny that there are many who cling to religious dogmas which have been exploded by facts revealed by science. For such we have compassion, but we hold in far higher contempt the bigoted blustering fanatic who has no religious belief whatever.

Hume admitted that he dared not select his own confidential servant from such as held his own principles. We believe we are correct in saying that Professor Huxley, who holds views somewhat akin to Spencer, is careful in selecting a school for his children where the Bible is taught. These facts appear to show conclusively that these advanced thinkers considered that there was a possibility that they might be wrong, and that some discretion was necessary in teaching their atheistical views, at least in their own families.

We apprehend that similar prudence should be practiced by all who are directly or indirectly answerable for now *popularizing* views and principles which, if successfully propagated, will be destructive even to a simple belief in God, and aim to undermine society itself by denying the intrinsic value of morality.

Finally, we ask that science shall no longer bear the odium of atheism; that it be freed from this pernicious parasite, and that atheism being published in journals devoted to that subject, shall be supported only by its own devotees.

WE trust the above remarks may not be interpreted as an attack on the "*Popular Science Monthly*" as a journal, or personally on the editors. The latter are gentlemen, honored and respected wherever science is known, and have been pioneers in the good work of introducing scientific knowledge into the homes of the people; their journal has always been conducted in a manner to defy criticism, and is an honor to the house which publishes it. The recent editorial was a bold demand for criticism on the policy of the journal teaching doctrines, which appear to lie outside of its province as a scientific journal. To this we have responded.

The root of the question at issue lies in the interpretations of the works of Herbert Spencer. We consider Professor Morris a safe guide in this matter, and a perusal of his letter will show that Spencer's writings have a dual character, they *partly* confirm the position taken by the "*Popular Science Monthly*," so far as showing Spencer believes in a "*something*," but are fatal to all the deductions drawn by the editors of that journal, and strictly in accord with the position we have reluctantly taken in this controversy.

NEW YORK ACADEMY OF SCIENCES.

Dec. 12, 1881.

SECTION OF GEOLOGY.

The President, Dr. J. S. NEWBERRY, in the Chair.

Forty one persons present.

Mr. N. L. BRITTON presented

"ADDITIONAL NOTES ON THE GEOLOGY OF STATEN ISLAND." *

Two wells have recently been sunk to a considerable depth on Staten Island, in the vicinity of Stapleton. One of these is on the property of Mr. J. J. Cisco, near the summit of the Serpentine hills; the section as given by the Superintendent of the Pierce Well-boring Co., who sank it, is as follows:

Glacial drift,	50 feet.
Soapstone,	150 feet.

* These notes are supplementary to the paper on this subject read by R. Britton on April 4, 1881. (Ann. N. Y. Ac. Sci., II, 161.)

The well is six inches in diameter, and sufficient water was obtained to make it a success.

The other well is at the pump-house of Bischoff's Brewery, some 500 feet east of the most eastern serpentine outcrop at the foot of the hills. This has now (Dec. 1st) reached a total depth of 210 feet, and the boring is still unfinished. The section thus far has been as follows:

Glacial drift 80 feet.

Various kinds of tough hornblende schist, apparently varying to serpentine, . . . 130 feet.

As yet no gneiss nor granite has been reached.

An outcrop of clay occurs near Clifton, about three-fourths of a mile south of the Forts, near the southern edge of the terminal moraine; it has been found, by borings made by Mr. Charles Townsend, in excavations for cellars, to be at least ten feet in thickness, and of a light color.

The clay is probably of Cretaceous age, and if so, this is the most eastern point at which beds of that age are known on Staten Island.

Mr. W. T. Davis has recently observed a large fossiliferous boulder of Schoharie Grit on the shore at Brighton Point. The fossils have been submitted to Dr. Newberry, and the following species identified:—*Dalmanites anchizops*; *Orthoceras Pelops*, *Strophodonta hemispherica*; *Atrypa reticularis*; *Strophomena rhomboidalis*; a *Fenestella*; and *Zaphrentis prolifera*.

Glacial groovings have recently been noticed on the hornblende-rock, which is exposed at tide-level on Brighton Point. Some of the grooves are at least one-quarter of an inch in depth, three inches wide and four feet long. Their bearing varies from N. 15° W. to N. 17° W.

DISCUSSION.

Prof. D. S. MARTIN considered the specimen of so-called hornblende schist from the well-boring, not to consist properly of that rock, but to be partly hydrated—apparently a less altered condition of the rock which higher up gives us the soft, semi-fibrous serpentine of the island.

Dr. NEWBERRY regarded the serpentine of Staten Island as probably a pseudomorphous condition of hornblende slate. It differs considerably from the mottled serpentine of New York Island, which is "verde antique"; that is, is composed partly of serpentine and partly of carbonate of lime, and is scarcely distinguishable from the Moriah marble, which is quarried at Moriah, Thurman, etc., in the Adirondack region. It is a peculiar rock, and one of the connecting links between the rocks of New York Island and those of northern New York and Canada. Taken together, these afford strong indications of the Laurentian age of the New York Island and Staten Island crystalline rocks.

Dr. Newberry further said that the accurate determination of the age of the rocks of New York Island, of Staten Island, and of those underlying the drift of Long Island, was in the highest degree desirable and important; and while he was satisfied that the former were Laurentian, and the latter Cretaceous, it was eminently desirable that unquestionable proof should be found of this, if it is true. At present no positive assertions could be made, and the duty devolves on the geological members of the Academy to rid the subject of doubt.

The fossils in the boulder referred to by Mr. Britton prove to have come from the Schoharie Grit. In its original condition this was a hard, compact blue limestone, but is here presented in a leached state, by the passage of waters containing carbonic acid, with a loss of its lime, color, and density. It was derived from northern New Jersey, to which locality a belt of this rock runs down from Schoharie county. Its transit by ice was effected without doubt through the valley of the Hackensack,

which lies east of the Orange Mountains and west of the Palisades. This glacial movement is indicated by the direction of the striæ observed by Mr. Britton, as well as by those in the Hackensack valley.

Mr. A. A. JULIEN recalled the results of his lithological examination of the serpentines both of Staten Island and of Hoboken, presented before the Academy two years ago, in which it was shown that sections of all these rocks abounded in minute fragments of more or less altered amphibole. The conclusion then stated, that these serpentines must be certainly derived from hornblende schist, was confirmed by the interesting discovery of the latter rock, both in well-boring and on Brighton Point. Serpentines of the same general character and origin occur frequently throughout New York and Westchester counties. The mineral serpentine is also found in small quantity as a vein-deposit, not pseudomorphous, like the main mass, but presenting an amorphous material with banded vein-structure, associated with magnesite, dolomite, etc.; e. g., the marmolite of Staten Island, a translucent green variety found at Hoboken, and also at West 60th street on New York Island, etc. At all these localities the amphibole survives in a more or less altered condition; e. g., the tremolitic talc schists and slaty tremolitic serpentines of Staten Island and Hoboken, the hydrous anthophyllite and unaltered tremolyte rock of West 60th street, New York, the tremolitic amphibolyte of New Rochelle and Rye, in Westchester county, etc.

Mr. BRITTON confirmed the last remarks, by the statement that a vein of material, strongly resembling the hydrous anthophyllite of New York, had been struck at the bottom of one of the wells on Staten Island; also that veins of mixed serpentine and calcite were observed at Stapleton, possessing a banded structure parallel to their walls. At that point the apparent thickness of the serpentine bed is 150 feet, but the crest of the hill is composed of talcose schist.

MR. W. LE CONTE STEVENS then read a paper on "THE MAMMOTH CAVE OF KENTUCKY."

He also exhibited specimens of the blind fish (*Amblyopsis spelæus*), and blind crawfish (*Cambarus pellucidus*), and stereoscopic views of various points in the interior of the cave.

(Abstract.)

At the close of the Cincinnati meeting of the American Association for the Advancement of Science, in August last, he was one of a party of seventy-five members who visited the Mammoth Cave, remaining there two days, during which the greater part of the time was spent in exploration. He made no claim to new discoveries, but wished to call the attention of the Academy especially to recent observations, for the most part by Rev. H. C. Hovey, of New Haven, in regard to the temperature and structure of the cave. Mr. Hovey read a paper on this subject in Cincinnati, only a brief abstract of which has yet appeared in print, making use of a map, which is the first of its kind ever exhibited. The strictest precautions are observed by the authorities controlling the cave to prevent visitors from taking surveying instruments in with them: but the present manager, Mr. Francis Klett, has made a careful survey of the most interesting parts, and in time this will probably be given to the public, though possibly the scale of measurement may be withheld.

The central and right-hand portions of the map exhibited by Mr. Stevens had been enlarged by him from a copy of Mr. Klett's map. The left-hand portion was drawn only from recollection of the localities traversed, and not to scale, being intended only to illustrate principles. The same remark applies to the vertical projection, the lettering of which corresponds with that of the horizontal projection.

The temperature observations of Mr. Hovey were con-